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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/805,636	03/19/2004	Donald J. Lewis	81100252	1675
36865 7590 09/21/2007 ALLEMAN HALL MCCOY RUSSELL & TUTTLE, LLP 806 S.W. BROADWAY, SUITE 600 PORTLAND, OR 97205			EXAMINER NGUYEN, TU MINH	
			ART UNIT 3748	PAPER NUMBER
			MAIL DATE 09/21/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/805,636

Applicant(s)

LEWIS ET AL.

Examiner

Tu M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-18, 29-31, 33-35 and 52-64 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16-18, 29-31, 33-35 and 52-64 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 20070423, 20070625.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

1. An Applicant's Amendment filed on June 25, 2007 has been entered. Claims 1-4, 7-11, 14, 15, 19-22, 24, 25, and 51 have been canceled; claims 16, 17, 29, and 52-55 have been amended; and claims 60-64 have been added. Overall, claims 16-18, 29-31, 33-35, and 52-64 are pending in this application.

Election/Restriction.

2. Applicant's election without traverse of the species of Figure 15 in the Applicant's Response to Restriction Requirement is acknowledged. Claims 16-18, 29-31, 33-35, and 52-64 are readable thereon and will be examined in their full merit.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 16-18, 29-31, 33-35, 52-57, and 60-64 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

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Newly amended claims 16 and 52, the amended phrases are new matter, because the phrases “with at least one cylinder deactivated” and “...said first number of active valves is greater than said second number of active valves” do not appear to be described in the original specification in a way to reasonably explain to one skilled in the art. New claims 63-64 fall with claim 52.

Claim 18 falls with claim 16.

Claim 29 includes an amended portion that states “...electrically actuated valve operating condition” which does not appear to be described in the original specification.

Claim 54 includes an amended portion that states “...said second mode...” which does not appear to be described in the original specification.

Claim 55 includes an amended portion that states “...each electrically actuated intake valve...” which does not appear to be described in the original specification.

Newly added claims 60-62 includes new matter, because in claim 60, the phrase “...operating the engine in a second mode with a number of cylinders deactivated, and a second number and pattern of active exhaust valves per cylinder operating to carry out combustion in active cylinders, where said first number or pattern of valves operating is different from said second number or pattern of valves operating...” does not appear to be described in the original specification. Claims 61-62 fall with claim 60.

In order to expedite the prosecution process of this present application, the examiner assumes that applicants will correct and delete the new matter issues. The examiner will examine the previously presented subject matters accordingly in this Office Action.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States:

6. **Claims 16-18 and 52-59 are rejected under 35 U.S.C. 102(b) as being anticipated by Boyer et al. (U.S. Patent 6,382,193).**

Re claim 16, as shown in Figures 1, 2, and 4, Boyer et al. disclose a control method for selecting and controlling cylinders and valves (18, 20) in an internal combustion engine, the method comprising:

- a first mode (Full Cylinder mode) of operation to select and deactivate a first number (zero) of cylinders, and to carry out combustion in the remaining cylinders with a first number (1 valve (20)), of active valves; and

- a second mode (Boosted VDE or VDE mode) of operation to select and deactivate a second number (1 to 4 cylinders or 4 cylinders) of cylinders, and to carry out combustion in the remaining cylinders with a second number (2 valves (18, 20) or 1 valve (20)) of active valves..

Re claim 17, in the method of Boyer et al., the active intake valves in each cylinder are coupled to a common intake manifold.

Re claim 18, in the method of Boyer et al., the first number of active valves and the second number of active valves form different valve patterns (in the case of Full Cylinder mode versus Boosted VDE mode).

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Re claims 52-54, as shown in Figures 1, 2, and 4, Boyer et al. disclose a method for operating an internal combustion engine with electrically actuated valves (18, 20), the method comprising:

- operating the engine in a first mode (Boosted VDE mode) with a first number (1 to 4 cylinders) of cylinders deactivated, and a first number of valves (2 valves (18, 20)) operating to carry out combustion in active cylinders; and
- operating the engine in a second mode (VDE mode) with a second number (4 cylinders) of cylinders deactivated, and a second number of valves (1 valve (20)) operating to carry out combustion in active cylinders, where the first number (1 to 4 cylinders) of cylinders deactivated is different from the second number (4 cylinders) of cylinders deactivated, and the first number of valves (2 valves) operating is different from the second number (1 valve) of valves operating.

Re claim 55, as depicted in Figures 1, 2, and 4, Boyer et al. disclose a method for operating an internal combustion engine with electrically actuated valves (18, 20), the method comprising:

- operating the engine in a first mode (Boosted VDE mode) with a first number (1 to 4 cylinders) of cylinders deactivated, and a first configuration (both valves (18, 20)) of valves operating to carry out combustion in active cylinders; and
- operating the engine in a second mode (VDE mode) with a second number (4 cylinders) of cylinders deactivated, and a second configuration (valve (20)) of valves operating to carry out combustion in active cylinders, and the first configuration of valves operating is different from the second configuration of valves operating.

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Re claims 56-57, in the method of Boyer et al., the first number of cylinders deactivated is the same as or different from the second number of cylinders deactivated.

Re claims 58-59, as illustrated in Figures 1, 2, and 4, Boyer et al. disclose a method for operating an internal combustion engine with electrically actuated valves (18, 20), the method comprising:

- varying a number of deactivated cylinders and varying a number of active valves in active cylinders to regulate engine output during engine operation (see Figure 4 for Boosted VDE mode) (also see lines 45-55 of column 2); and
- varying a number of strokes of a cylinder cycle to further regulate engine output during engine operation (see lines 12-16 of column 4).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 29-31 and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boyer et al. in view of Hori et al. (U.S. Patent 6,401,684).**

Re claim 29, as illustrated in Figures 1, 2, and 4, Boyer et al. disclose a method for determining the number of cylinders to operate in an internal combustion engine with electrically actuated valves (18, 20), the method comprising:

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- determining an operating condition (Boosted VDE mode) of the internal combustion engine;
- selecting a number of cylinders (4 firing cylinders) to operate based on the engine operating condition;
- determining a number (two valves (18, 20)) of electrically actuated valves to operate in the selected cylinder based on the number of cylinders; and
- operating the number of electrically actuated valves in the selected cylinder during a cycle of the internal combustion engine based on the evaluation.

Boyer et al., however, fail to disclose that the method further comprises a step of determining an operating condition of at least one of the electrically actuated valves; and that the step of selecting a number of cylinders to operate is further based on the electrically actuated valve operating condition.

As shown in Figure 1, Hori et al. disclose a system for controlling an engine equipped with electromagnetically operated engine valves (2, 3). As illustrated in Figures 11 and 22, Hori et al. teach that it is conventional in the art to monitor and determine an operating condition of the valves; and if a valve is determined to be abnormal, the cylinder having the abnormal valve is deactivated. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the teaching by Hori et al. in the method of Boyer et al., since the use thereof would have been routinely practiced by those with ordinary skill in the art to reduce engine misfires, emissions, and engine performance degradation due to abnormal valves.

Re claim 33, in the modified method of Boyer et al., the operating condition of the internal combustion engine is a speed of the internal combustion engine.

Re claims 34-35, in the modified method of Boyer et al., the operating condition of the electrically actuated valve is a temperature or an impedance of the electrically actuated valve, as taught by Hori et al.

Re claims 30-31, the modified method of Boyer et al. discloses the invention as cited above, however, fails to disclose that the operating condition of the internal combustion engine is an engine temperature or a time since start of the internal combustion engine.

Boyer et al. disclose the claimed invention except for utilizing the parameters such as “engine temperature” or “a time since start of the engine” to determine an engine torque requirement. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use each of said parameters to determine an engine torque requirement in Boyer et al., since the recitation of such amounts to an intended use statement. Note that both “engine temperature” and “a time since start of the engine” are routinely utilized in the art to determine an engine torque demand; and the mere selection of each parameter for use in Boyer et al. would be well within the level of ordinary skill in the art.

Response to Arguments

9. Applicant's arguments with respect to the references applied in the previous Office Action have been fully considered but they are moot in view of the new ground(s) of rejection.

Since Applicant fails to respond to the rejection of claims 58-59, it is therefore assumed by the examiner that Applicant has acquiesced with said rejection.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office Action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Prior Art

11. The IDS (PTO-1449) filed on April 23 and June 25, 2007 have been considered. An initialized copy of each is attached hereto.

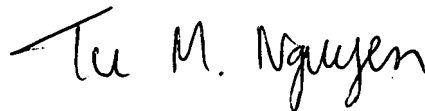
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Communication

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (571) 272-4862.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



TMN

Tu M. Nguyen

September 17, 2007

Primary Examiner

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